

*Dasyproctus conator*, Turn.

*Crabro* (*Rhopalum*) *conator*, Turn. Proc. Zool. Soc. p. 526 (1908). ♂.

*Dasyproctus idoneus*, Turn.

*Crabro* (*Rhopalum*) *idoneus*, Turn. Proc. Zool. Soc. p. 527 (1908).  
♀ ♂.

*Crabro* (*Crossocerus*) *prosopoides*, Turn.

*Crabro prosopoides*, Turn. Proc. Zool. Soc. p. 528 (1908). ♂ ♀.

The following Australian species are closely allied to the European *Crabro vagus*, Linn., and may be placed in the subgenus *Solenius*, though differing in the sculpture and the absence of constrictions between the abdominal segments from *C. interruptus*, Lep., the type of the subgenus:—

1. *Crabro* (*Solenius*) *tridentatus*, Sm. Trans. Ent. Soc. London, p. 250 (1868). ♀.
2. *Crabro* (*Solenius*) *cinctus*, Turn. Proc. Zool. Soc. p. 531 (1908). ♀.
3. *Crabro* (*Solenius*) *bivittatus*, Turn. Proc. Zool. Soc. p. 534 (1908). ♀.
4. *Crabro* (*Solenius*) *conglobatus*, Turn. Proc. Zool. Soc. p. 533 (1908).  
♀ ♂.
5. *Crabro* (*Solenius*) *tasmanicus*, Sm. Cat. Hym. B.M. iv. p. 425 (1856). ♀.
6. *Crabro* (*Solenius*) *mackayensis*, Turn. Proc. Zool. Soc. p. 532 (1908). ♀.
7. *Crabro* (*Solenius*) *ordinarius*, Turn. Proc. Zool. Soc. p. 532 (1908).  
♀ ♂.
8. *Crabro* (*Solenius*) *neglectus*, Sm. Trans. Ent. Soc. London, p. 249 (1868).

In *ordinarius*, *conglobatus*, and *bivittatus* the mandibles are tridentate at the apex, as is usual in *Solenius*, not bidentate as stated erroneously in the original description.

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VII.—*Descriptions of new Harvest-men of the Family Phalangodidæ.* By STANLEY HIRST.

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[Plate I.]

*Key to the Genera of Phalangodidæ which are represented in the British Museum Collection.*

- a. Eyes placed on a single tubercle.  
a<sup>1</sup>. A long median thorn present on the ocular tubercle.

- a*<sup>2</sup>. Transverse grooves of scutum well defined and four in number. Thorn of ocular tubercle not furnished with granules or processes.
- a*<sup>3</sup>. Patella of palp quite unarmed.
- a*<sup>4</sup>. Palp of moderate length . . . . . *Pseudobiantes*, Hirst.
- b*<sup>4</sup>. Palp very long, especially its femur and patella . . . . . *Parabiantes*, gen. nov.
- b*<sup>3</sup>. Patella of palp armed with long spines.
- a*<sup>5</sup>. Femur of palp armed below with several long spines. Femora of first and second legs quite unarmed . . . . . *Epedanus*, Thorell.
- b*<sup>5</sup>. Femur of palp armed both above and below with processes of moderate length. Femora of first and second legs armed with short processes . . . . . *Plistobunus*, Poc.
- b*<sup>2</sup>. Transverse grooves five when distinct. Central thorn of ocular tubercle nearly always furnished either with granules or processes.
- a*<sup>6</sup>. Femur of palp strongly compressed laterally . . . . . *Baramia*, gen. nov.
- b*<sup>6</sup>. Femur of palp at most only slightly compressed laterally . . . . . *Sitalces*, Simon, and [*Podoctis*, Thorell.
- b*<sup>1</sup>. Ocular tubercle without a long central thorn.
- a*<sup>7</sup>. Abdominal part of scutum provided with a low but conspicuous tumulus in the middle . . . . . *Vima*, gen. nov.
- b*<sup>7</sup>. Abdominal part of scutum without tumulus.
- a*<sup>8</sup>. Fourth leg of both sexes quite unarmed . . . . . *Phalangodes*, Tellkampf.
- b*<sup>8</sup>. Fourth leg of male furnished ventrally with stronger spinules than is the case in the female and with a conspicuous process (or processes?) on each side near the distal end of the tibiæ (see Pl. I. fig. 1 *a*) . . . . . *Zalmoxis*, Sör.
- b*. Eyes not placed on a single tubercle, but widely separated from one another and either sessile or each placed on a very slight tumulus.
- a*<sup>9</sup>. Femur of palp armed below with a single spine or without any ventral spines. Femur of first leg unarmed. No thorn between the eyes . . . . . *Hinzuanius*, Karsch, and [*Lacurbs*, Sör.
- b*<sup>9</sup>. Femur of palp armed below either with long spines or long processes. Femur of first leg usually armed with long spines. A thorn often present midway between the eyes.

- a*<sup>10</sup>. Femora of posterior legs straight and unarmed . . . . . *Ibalonius*, Karsch.  
*b*<sup>10</sup>. Femora of posterior legs curved and armed ventrally with processes . . *Holozoster*, Loman.

*Zalmoxis austerus*, sp. n. (Pl. I. figs. 1, 1 a.)

♂. *Body*.—The shape of the body of this new species is very like that of *Z. robusta*, Sör., as figured by Sörensen, the cephalothoracic part of it being much narrower than and not nearly so high as the abdominal part.

*Scutum* longer than the patella + the tibia of the fourth leg. It has five transverse grooves; the first one, which is well defined and procurved, forms the boundary between the cephalothoracic and abdominal parts of the scutum; the other grooves are not so distinct, the one between the first and second areas of the abdominal part being faint. First abdominal area large, but its length (when measured along the median line) is very much less than that of the cephalothoracic part. Except for three or four rather inconspicuous granules on each side of the anterior margin and for one or two lateral granules, the surface of the cephalothoracic part is quite smooth. Numerous granules are present on the first abdominal area and a rather narrow transverse band of them is present on each of the three following areas; the granules of which these bands are composed are not very regularly arranged, but they are usually about two deep. The last abdominal area has fewer granules on its surface than the other areas, and for the greater part of its width they are arranged in a single series only; like those of the penultimate area, they are sharply pointed and directed backwards. There is also a longitudinal series of granules on each side of the scutum. *Ocular* tubercle situated near the anterior margin. It is elongated transversely, being considerably wider than long, and has no large processes of any kind on its surface, but is furnished with a number of granules, which are not arranged in a regular manner.

*Free dorsal segments*.—The two anterior of the free dorsal segments each have a single transverse series of granules, similar to that on the last area (posterior margin) of the scutum; on the third free segment the granules are more numerous and less regular in arrangement and are mostly ranged about two deep. The fourth free dorsal segment has numerous granules and they are not arranged in series.

*Ventral surface*.—Fourth coxa very much wider than the others. There are a number of distinct granules on the ventral surface of the first coxa, but only obsolete granules

are to be seen on the other coxæ. A transverse series of minute granules is present on each of the sternites. On each side of the first sternite there is a slight ridge which commences at the spiracle and runs forward for some distance.

*Chelicera.*—Proximal segment short and quite smooth. Second segment moderately stout; dorsally it has only two or three obsolete granules, which carry hairs.

*Palp* not very long. There are two or three very little granules on the dorsal surface of the trochanter, and a conical granule and two processes, one of which is long, are situated on its lower surface. Femur armed with a single long spine on its inner side near the distal end; ventrally it has three spines (and also a little tooth-like process), the two spines near its proximal end being much the longest. Patella with a long spine on the inner side. Tibia much higher and wider than the other segments of the palp; it has three spines on each side, the distal one of the outer side being short. Tarsus with two long spines on each side and also with a very short distal spine on each side.

Legs short; the fourth is the longest and stoutest (when they are arranged according to length, their order is as follows: 4, 2, 3, 1). The denticles on the ventral surface of the femur of the fourth leg, especially those near the distal end, are larger than those of the rest of its surface. Tibia of fourth leg stoutest nearest the distal end; besides the denticles on its surface, it has a sharply pointed ventral process on each side near the distal end, the outer one being long. Number of tarsal segments 3, 7, 5, 6. Claws of posterior legs smooth.

*Colour* blackish brown. Appendages dark brown, but the coxæ of the legs are pale above and the tarsi of all the legs, except those of the second pair, are rather pale also.

*Measurements in mm.*—Length of body 4.1, of scutum 3.25.

*Material.*—Two specimens from New Britain (Neu Pomern); one of which is an adult male and has the penis extruded. These specimens were collected by Prof. Willey in the year 1897.

*Remarks.*—This new species resembles *Z. pygmaea*, Sör., in having its ocular tubercle placed much nearer to the anterior margin than to the first transverse groove. The shape and granulation of the body are, apparently, quite different to what they are in *Z. pygmaea*, however.

#### Genus VIMA, nov.

Cephalothoracic part of scutum only slightly convex. Ocular tubercle low and transverse and much wider than

long ; on each side of its upper surface a minute and rather inconspicuous granule is present. Abdominal part of scutum furnished with a low whitish rounded eminence in the middle of its surface. Palp armed with spines of the usual Phalangodid type. [For their number and arrangement, see the specific description.] Fourth coxa not so very much broader than the third, instead of being very much broader than it, as in the Gonyleptidæ.

*Vima insignis*, sp. n. (Pl. I. fig. 2.)

*Dorsal surface. Scutum.*—Both cephalothoracic and abdominal parts slightly convex ; transverse grooves ill defined, except the one which forms the boundary between the two principal parts of the scutum and that which is placed just in front of its posterior margin. [For the structure of the ocular tubercle, see the generic description.] A low rounded eminence, which is sometimes circular, sometimes oval in shape, is situated in the middle of the abdominal part of the scutum. Otherwise the scutum is almost smooth, for it has only a few very minute and inconspicuous granules on its surface, those of the transverse row, which occurs near the posterior margin, being perhaps the most distinct. *Free dorsal segments* each with a transverse row of minute and inconspicuous granules.

*Ventral surface.*—First coxa with a process in front, and with a transverse series of rather large granules on its anterior margin below, the outer ones being the largest. A transverse series of obsolete granules is usually present on the surface of each of the remaining coxæ and a few granules are also present on the sternites.

*Chelicera.*—On the inner side of the dorsal surface of the proximal segment two minute granules are present, and two or three little granules, which are slightly more distinct, also occur on the outer side. Second segment furnished with several granules on the inner side of its upper surface, but with one or two exceptions they are quite obsolete.

*Palp* armed with long spines. Trochanter with only two minute granules below. Femur armed with an apical spine on its inner side, and with a ventral row of four spines, the two proximal ones being much larger than the other two. Patella with a single spine on its inner side. Tibia with two spines on its inner side, and sometimes it has also an additional little denticle distally ; on its outer side there are three spines and also a minute proximal denticle. Tarsus with two spines on each side and a short apical spine on the

inner side also; the apical spine on the outer side is either quite obsolete or absent.

*Legs* long. Their femora are furnished with very minute granules; femur of first leg without any processes. Patellæ of posterior legs with two or three minute granules at the distal end above. Apparently there is no scopula on the tarsi of the posterior legs and their claws are without teeth. Tarsal segments 7, ?, 7, 7.

*Colour*.—Body and appendages brown; the eminence in the centre of the abdominal part of the scutum is white; segments of scutum also seemingly faintly outlined in white. Patellæ and the distal ends of the femora and of the tibiæ of the legs blackish.

*Measurements in mm.*—Length of trunk 2.5, of first leg 16.25, of second (?), of third 21, of fourth 31.

*Material*.—Four specimens collected by Rose Lloyd in the Higher Potaro River District, British Guiana.

*Ibalonius quadriguttatus*, sp. n. (Pl. I. figs. 3, 3 a.)

*Scutum* convex, and it is a little shorter than the tibia of the third leg. There are three pairs of thorns on its surface. Those of the first pair are long and they are situated at about a third of the length of the scutum from its anterior margin. They are followed at a short distance by the thorns of the second pair, which are quite short. The thorns of the third pair are long; they are placed at some distance in front of the posterior margin and are separated from it by a transverse groove. Some distance in front of this last pair of thorns there is a pair of little granules and then a transverse series of about four granules. A similar series is also present on the last area of the scutum. [I think that the first pair of thorns is placed on a part of the surface of the scutum corresponding to the hinder half of the cephalothoracic part, and that the second pair belongs to the first abdominal area; the last pair of thorns belongs, without doubt, to the fourth abdominal area of the scutum. Owing to the absence of all of the transverse grooves, except the last one, it is difficult to be certain about this, however.] The distance which separates the eyes from one another is about twice that which separates them from the lateral margin. Each eye is placed on a very slight elevation and a little arch-like structure, carrying a little pointed granule on its dorsal surface, joins each of these two elevations to the anterior margin of the scutum.

A transverse series of little granules is present on each of the anterior *free dorsal segments*, but they are only distinct on the first one, the granules on the others being obsolete.

*Ventral surface.*—There are a number of granules and some rather long conical processes on the ventral surface of the first coxa. The second coxa has a transverse row of little granules and also some scattered obsolete granules. A number of obsolete granules also occur on the posterior coxæ, but the sternites have not any granules.

*Chelicera.*—Proximal segment quite short (for its shape, see fig. 3). It has a single long pointed process on the inner side below and two long processes on the outer side. There are also one or two conical granules on the dorsal surface. Second segment fairly large and swollen; on its upper surface there are about seven tooth-like processes, and a large tooth-like process and a granule are present below.

*Palp.*—On the upper surface of the coxa of the palp there is a large curved process. The trochanter has a little pointed granule above; and it has a long spine and a little tooth-like process below, the former equalling the longest spine of the ventral surface of the femur in length. Two or three little granules occur on the upper surface of the femur and a rather long curved process is also present at its proximal end; below, this segment has 4–5 spines and processes, three of them being long and one or two quite short; a little spine is also present on the inner side near the distal end. Patella armed with two inner and one outer spine; there is also a little granule on its dorsal surface. Tibia and tarsus shaped much as in *Epedanus*, but not very wide. Tibia with three inner and two very long outer spines. Tarsus with two spines on each side.

*Legs long.* A couple of conical processes and a granule are present on the ventral surface of the trochanter of the first leg. Femur of first leg unarmed, but it is furnished with numerous minute granules. A very long process is placed on the anterior surface of the trochanter of the second leg, and there are a few little granules at the proximal of the femur of this leg. Coxa of fourth leg with a rather long conical tubercle or process on its upper surface. Scopula very dense on the last two segments of the posterior tarsi; claws of posterior legs smooth. Number of tarsal segments 4, 10, 5, 5; the proximal segment of the tarsus of the second leg is long.

*Colour* (faded?) pale yellow-brown; there are two iridescent golden spots on each side of the upper surface of the

trunk, one spot being placed immediately in front of the other; the thorns of the scutum are not darker than its surface.

*Measurements in mm.*—Length of trunk 3·75, of scutum 3·25, of fourth leg 25.

*Material.*—A single male specimen from Batjan (*Dr. W. Kükenthal*).

*Ibalonius kuekenthali*, sp. n.

Very closely allied to *I. quadriguttatus*, sp. n., but differing in the following details of structure and coloration:—

*Scutum* armed with two pairs of long thorns, which correspond to the first and third pairs of *I. quadriguttatus*, but the second pair of very short thorns, which are present in that species, are absent in *I. kuekenthali*. A little granule is placed midway between the eyes. A pair of little granules is present on the part of the scutum which apparently corresponds to the first abdominal area and there are three transverse series, each of four little granules, on the parts of the scutum apparently corresponding to the second, third, and fifth (last) abdominal areas of the scutum. As in *I. quadriguttatus* only the last transverse groove is distinct.

*Ventral surface.*—The granules on coxæ 2–4 are more numerous and more distinct in this species than is the case in *I. quadriguttatus*.

*Chelicera* and *palp* precisely similar in structure to those of *I. quadriguttatus*. The femur of the first leg is more coarsely granular than in that species. Number of tarsal segments 4, 12, 5, 5.

*Colour.*—Body pale brown, but its spines are very dark brown. There are no golden spots on the dorsal surface. Chelicera slightly infuscated; the palp pale; legs rather dark brownish.

*Measurements in mm.*—Length of trunk 3·75, of scutum 3·5, of fourth leg 26.

*Material.*—A single male example from Batjan, collected by *Dr. W. Kükenthal*.

*Remarks.*—The body and legs of this species are darker in tint (brownier) than is the case in *I. quadriguttatus*, and there are no golden spots on the scutum; moreover, the four thorns are much darker than the surface of the scutum. Besides this difference in coloration there are the slight structural differences noted above.

The most striking feature of these two new species of *Ibalonius* is the absence of the thorn which is usually present



between the eyes in this genus, but Dr. J. C. C. Loman\* has already commented upon two female specimens of *Ibalonius* which did not possess this thorn.

*Podoctis taprobanicus*, sp. n. (Pl. I. fig. 4.)

*Dorsal surface* strongly convex. *Scutum* about as long as the metatarsus of the third leg, slightly longer than the patella + the tibia of the third leg, and a little shorter than the patella + the tibia of the fourth. Transverse grooves five in number, the first two meeting one another in the mesial line. A pair of long and sharply pointed thorns, which are stout at the base, are situated near the middle of the fourth abdominal area. On each side of the anterior margin of the scutum a ridge supporting a row of six conical granules is present, and this ridge is joined to the ocular tubercle by a distinct arch, formed by two fused granules. A tooth-like projection is placed on each side of the scutum, close to the lateral margin and some distance behind the anterior margin. Numerous very fine granules, each carrying a short hair, also occur on the surface. Towards the middle of the hinder part of the cephalothoracic area there is a pair of slight elevations on which granules similar to those on the rest of the surface are present, one or two of them being slightly enlarged, however; one or two slightly enlarged granules are also present laterally in this part of the scutum. Besides the minute granules, each of the abdominal areas of the scutum, except the fourth, has a few larger granules, which are arranged in a single transverse row. *Ocular tubercle* placed slightly nearer the anterior margin of the cephalothoracic area than to the posterior margin. It is very wide at the base; in the middle there is the usual thorn; it has a very stout and wide base, which is rounded posteriorly, but almost vertical in front; the thorn which springs from this tubercular base is straight and fairly long, and as is usual in the genus *Podoctis*, it is directed forwardly. Each of the two eyes is situated on the side of a small lateral tumulus on the ocular tubercle. Except anteriorly, where it is quite smooth, its surface is furnished with numerous minute granules. Several slightly larger granules can be distinguished, one of them being placed in the middle of the upper surface of the basal portion of the spine and one or two others on each side of it; on each side of the spine itself a slightly enlarged granule is also present. *Free dorsal segments* 1-3 each furnished with a transverse row of enlarged

\* 'Nova Guinea,' vol. v. p. 4 (1906).

granules, those in the middle of the row being slightly larger than the others and conical in shape. Fourth dorsal segment without any especially large granules.

*Ventral surface.*—Coxæ with a number of distinct granules, and each sternite has a single transverse row of granules.

*Chelicera.*—First segment rather short; on its dorsal surface there is a little granule, and ventrally on the outer side this segment has 2–3 conical granules, which are situated at the proximal end. There are 6–7 long conical granules or tubercles on the upper surface of the second segment and they occupy its entire length, but are not very regular in arrangement; two or three of them are larger than the others.

*Palp* stout. Two conical granules, placed close together, are present on the dorsal surface of the coxa. Trochanter ventrally with two sharply pointed projections, the anterior one being comparatively long. Femur with an apical spine on its inner side; ventrally it has a small denticle at the proximal end and also three long spines, which are situated at equal distances from one another. Proximal end of patella narrowed; this segment has two long inner spines, and on the outer side it has a sharp little denticle and a moderately long spine. Tibia with three spines on each side, the middle one being the longest in both cases; on the outer side there is also a minute apical denticle. Tarsus about as long as the tibia, and furnished with two spines on each side, those of the proximal pair being the longest.

Legs 2, 4, 3, 1. With the exception of those of the first pair, which are very much shorter than the others, they are fairly long. Second leg a little longer than the fourth. A rather long upwardly directed process is placed on the dorsal surface of the fourth coxa and a much smaller, but very similar, process occurs on the coxa of the second leg. Trochanter of first leg with several granules below, two or three of them being fairly large and conical in shape. Only very minute and inconspicuous granules are present on the dorsal surface of the femur of the first leg, but it has a longitudinal series of spines below, four of which are long, and these long spines alternate with short ones, the latter being five in number, including the two very short ones at the distal end of the row. There are four granules on the lower surface of the trochanter of the second leg, three of them being fairly large and conical. Tarsal segments 4, 8 or 11, 5, 5; the tarsus of one of the legs of the second pair has eight segments, but that of the one on the other side has eleven, so

that possibly one of them is abnormal. Claws of posterior legs unarmed.

*Colour*.—Body rather dark brown above; on each side of the abdominal part of the scutum there is a pair of little yellow spots, one spot being placed in front of the other; the anterior one is situated on the hinder margin of the first abdominal area, and the other on the second abdominal area. Legs brownish; the femora, tibiæ, and metatarsi of the posterior legs are furnished with minute dark spots; the extreme distal end of the metatarsi and the entire length of the tarsi of all the legs are pale.

*Measurements in mm.*—Length of trunk 5.25, of scutum 4, of second leg (from base of femur) 18, of fourth leg 16.25.

*Material*.—A single specimen from Punduloya, Ceylon; collected by Mr. E. E. Green.

*Remarks*.—This species resembles *P. pictulus*, Poc. (from Kandy?) in not having any spines on the upper surface of the femur of the first leg, but is larger in size and also differs in coloration, in the position and structure of its ocular tubercle, armature of scutum, &c.

*Podoctis willeyi*, sp. n. (Pl. I. figs. 5, 5 a.)

*Dorsal surface* strongly convex. *Scutum* longer than the tibia of the third leg, but not so long as the tibia of the fourth. Only four transverse grooves are visible on its surface in the adult, and the second and third of them are sometimes indistinct; the transverse groove which is normally present between the cephalothoracic and abdominal parts of the scutum is indistinct or absent; in young examples all five transverse grooves can be distinguished, the one between the cephalothoracic and abdominal parts being quite distinct. The first apparent area, therefore, consists of the cephalothoracic part + the first abdominal area of the scutum, and is very large, its length exceeding that of the rest of the scutum. Two pairs of long thorns are present on the scutum; the first pair is situated some distance in front of the first transverse groove, and these thorns are a little shorter and are situated a little further apart than those of the hinder pair; the latter are placed on the penultimate abdominal area. Near the anterior margin on each side there is a ridge, but the granules which are situated on it are quite small in size; it is joined to the ocular tubercle by an arch-like structure, exactly as in *P. taprobanicus*, sp. n., and a

minute granule is situated on the middle of this arch. Numerous minute granules, bearing short hairs, are present on the surface and on the bases of the large thorns. A transverse series of larger granules is present just in front of the first distinct transverse groove, and a similar row is present on each of the following areas of the scutum, with the exception of the penultimate one. *Ocular tubercle* situated at quite a short distance from the anterior margin; it is wider than that of *P. taprobanicus*, its width being about half the length of the scutum, and is low laterally; in the middle there is the usual long thorn, the base of which is very wide, but not nearly so stout as the base of the central thorn of the ocular tubercle of *P. taprobanicus*. Each of the *free dorsal segments* has a transverse row of granules similar to those which are present on the abdominal segments of the scutum.

*Ventral surface* furnished with numerous minute granules; a number of larger conical granules occur on the coxa of the first leg, and other granules which are not so large or distinct are present on the coxa of the second.

*Chelicera*.—Proximal segment of chelicera rather long, but not slender; its length is about equal to that of the second segment (not including the finger); on the inner side it has three rather long tooth-like processes and also one or two granules; on its outer side there is a series of six long processes (including the apical one, which is not so strong or so well defined as the others). Second segment considerably stouter than the first; a little process is present below on its inner side near the proximal end; dorsally this segment is furnished with a number of minute denticles and also with four larger tooth-like tubercles, of which the largest one is placed near the point of attachment of the movable finger and is sometimes divided into two points at its apex. Both the fingers have four teeth on their edge, three of which are placed near the apical end of each finger, and the remaining tooth, which is very large in the case of the movable finger, is placed midway between these three distal teeth and the proximal end of the finger.

*Note*.—This description is based on the chelicera of a specimen which I believe to be a fully adult male. The chelicerae of the other specimens are very different in appearance, the proximal segment being considerably shorter and armed with fewer lateral processes. I think that these differences are not due to sex in this particular instance, but merely to immaturity. The dentition of the fingers is the same in these specimens as in the adult one.

*Palp* slender, its coxa is armed above with a rather long curved process. Trochanter ventrally with a rather long process and a short tooth-like process. Femur armed below with three spines, which are practically equal in length; the spine which is usually present in this genus on the inner side of the femur near the apical end is absent in this species. Basal portion of spines of patella, tibia, and tarsus very much shorter than they are in *P. pictulus*, Poc., *P. taprobanicus*, sp. n., &c., and the terminal part is generally very long and slender. There are two spines on the inner side of the patella, the one near the proximal end being much shorter than the other; on the outer side there is a single long spine. Three spines occur on the inner side of the tibia, but the one which is placed nearest the proximal end is much shorter than the other two; this segment has two very long spines on its outer side, and their bases are comparatively long for this species, especially that of the proximal spine. Tarsus not quite so strongly flattened ventrally as is usually the case in the genus *Podoctis*; it has two fine spines or bristles and three shorter bristles on its inner side, and there are two long fine spines or bristles on its outer side. On the upper surface of the femur of the palp there are several granules, two processes or granules, which are situated close to the proximal end of the segment on its inner side, being more conspicuous than the others. One or two inconspicuous granules are sometimes also present on the upper surface of the patella and tibia.

*Legs* 2, 4, 3, 1. First leg very short, the others rather long. On the dorsal surface of the coxa of the fourth leg there is a large upwardly directed process, resembling that which is present in the same position in *P. taprobanicus*, sp. n., and the coxa of the second leg has a very similar process, but it is much smaller. Ventral surface of trochanter of first leg furnished with 3-4 fairly large conical processes, each of them bearing a fairly long seta. Femur of first leg with only two or three obsolete granules on its upper surface; below it has a longitudinal series of three conical processes, the first one of which is placed close to the proximal end of the segment; each of them bears a seta, and they are smaller than the processes of the ventral surface of the trochanter. Tarsal segments 6, 12-14, 5, 5. Claws of posterior legs apparently without any teeth.

*Colour*.—Trunk and appendages rather dark brown, but the trochanter of the first leg and the proximal end of its femur are quite pale; the tibia of the first leg has a pale ring, and the femora, tibiæ, and metatarsi of the other legs

are each marked near the distal end with a pale ring, but the ring of the femur of the second may be indistinct or absent; the extreme distal end of the metatarsi and the entire length of the tarsi of all the legs except the second pair are pale.

*Measurements in mm.*—Length of trunk of largest specimen 4·25, of scutum 3·5. (A smaller specimen has the scutum 2·75 mm. long and the fourth leg 15·5 mm. in length.)

*Material.*—Four examples collected by Prof. Arthur Willey in New Britain (now known as Neu-Pommern) in the year 1897. I think that one of these specimens is an adult male.

#### Genus *BARAMIA*, nov.

The shape of the femur of the palp is the distinguishing feature of this new genus, which otherwise closely resembles *Podoctis*, Thor., in structure.

#### *Baramia vorax*, sp. n. (Pl. I. figs. 6, 6 a, 6 b.)

Dorsal surface convex. *Scutum* about as long as the tibia of the third leg, considerably shorter than the tibia of the fourth and slightly less than half the length of that of the second. Transverse grooves five in number. There are seven conspicuous thorns on the surface (not including the three which are present on the ocular tubercle). The first pair of thorns is situated in the middle of the second abdominal area, and they are of considerable length. Those of the second pair are a little longer than those of the first, and they are placed in the middle of the fourth abdominal area of the scutum. There are three thorns on the fifth abdominal area, a long one being present in the middle and a comparatively short one on each side of it. A number of granules, each of which is furnished with a tiny hair, are also present on the surface of the scutum. On each side, near the anterior margin, there is a series of about six granules, the two outer ones being the largest; this series is joined to the ocular tubercle by a little arch-like structure, on the summit of which there is a little granule. The remaining granules of the cephalothoracic part are not distributed in a very regular manner, but those on the abdominal part of the scutum, although not numerous, are arranged in transverse series; the series on the last abdominal area is composed of more numerous granules than the others, however. There is also a longitudinal series of granules on each side of the scutum. The *ocular tubercle* presents much resemblance to that of the species of *Podoctis*. It is situated quite close to the anterior

margin of the scutum, and is not very low, but is elongated transversely, its width being about equal to the length of the cephalothoracic part of the scutum. The central thorn is inclined forwards and it is very long, its length considerably exceeding that of the longest of the thorns of the abdominal part of the scutum. Immediately to the inner side of each eye there is a fairly long thorn, but these lateral thorns are very much shorter than the central one. A number of granules similar to those on the surface of the scutum are also present on the ocular tubercle; several of them are placed on the base of the central thorn, and two very slightly larger ones are situated on the posterior surface of the slender portion of the thorn.

*Free dorsal segments* 1-3 each with a transverse series of little granules; the fourth free dorsal segment is furnished with rather numerous granules.

*Ventral surface.*—Numerous granules are present on the coxæ of the legs, and there is a transverse series of little granules on each of the ventral segments.

*Chelicera.*—Proximal segment long and comparatively slender; there are a number of granules on its upper surface, most of them being quite minute, but two or three larger pointed granules occur on each side of the upper surface; ventrally this segment has three or four little granules on its inner side and a longitudinal series of 5-6 elongated granules (or processes) on its outer side. The second segment is considerably stouter than the slender proximal segment and has seven processes, nearly all of which are long and acute, on its dorsal surface; it has also two conical processes (or granules) on the inner side below.

*Palp.*—Trochanter provided below with a longitudinal series of four processes. Femur compressed laterally and highest at the proximal end, its height gradually diminishing towards the distal end, which is almost cylindrical; on its dorsal surface this segment has only a series of minute granules, each with a fine hair, but there is a well-developed spine near the distal end on the inner side; below the femur is armed with a longitudinal series of eight spines. Patella with two inner and an outer spine. Tibia and tarsus distinctly flattened below, much as in *Epedanus* &c. There are three spines on each side of the tibia, the two distal ones on the outer side being very long; two tooth-like granules are present on the upper surface of this segment. The tarsus has two spines on each side, the proximal one of the outer side being very long.

*Legs* 2, 4, 3, 1. First leg very much shorter than the

others and the second leg much the longest. A little granule is present on the dorsal surface of the trochanter of the first leg, and this segment has two rather long setiferous processes or spines (and also two or three granules) on its lower surface. Femur of first leg armed with spines both above and below. Tarsal segments 3, 4, 5, 2. Claws of posterior legs unarmed.

*Colour* (faded) rather pale, but the dorsal surface is marked with darker specks and little patches. Femora, tibiæ, and the proximal end of the metatarsi of the legs conspicuously variegated with pale and dark bands.

*Measurements in mm.*—Length of trunk 2·5, of scutum 2·25.

*Material.*—A single adult male from the Baram River, collected by Dr. W. Kükenthal.

*Epedanus orientalis*, sp. n. (Pl. I. figs. 7, 7 a.)

*Scutum* very slightly longer than the tibia of the second leg and as long as the patella + the tibia of the fourth. It has four transverse grooves, the first being strongly procurved. The cephalothoracic part is large, its length being a little greater than that of the abdominal part; it has the three usual tooth-like processes on the anterior margin. Several little granules occur on each side near the anterior margin. There is a pair of fairly long thorns on the second of the abdominal areas of the scutum, and a lateral tooth-like process is sometimes present on each side of the last division. The greater part of the surface of the scutum is smooth, but a longitudinal series of minute granules runs down each side of it and the last area has a transverse series of minute granules; in one specimen the central granule of this transverse series is slightly larger than the others. *Ocular tubercle* situated practically in the middle of the cephalothoracic part of the scutum; the thorn is shorter than the transverse width of the tubercle.

Each of the first three of the *free dorsal segments* has a transverse series of granules, and sometimes the central granule is larger than the others. The last free dorsal segment is devoid of granulation.

*Ventral surface.*—A number of granules are present on the surface of the coxa of the first leg, most of them being very large and conical and arranged in a single transverse row. The second coxa has a transverse series of obsolete granules. There are not any distinct granules on the remaining coxæ nor on the sternites.

*Chelicera.*—Proximal segment long and almost cylindrical



for the greater part of its length, but its apical end is dilated. A number of conical granules and processes are present on its dorsal surface, and there are also two or three conical granules on the inner side below; one of the processes on the outer side of the dorsal surface and one of the two which are present on the dorsal surface of the enlarged distal part of the segment are considerably longer than the others. Second segment greatly swollen and furnished with several tooth-like processes and granules on its dorsal surface, two or three of them being bifid apically; this segment has also a single tooth-like process below.

*Palp* with the segments normal in shape and armed with long spines. Trochanter with a tooth-like granule and a long pointed process on its dorsal surface; ventrally this segment has a long pointed process and sometimes also a little granule. Femur with two or three longitudinal series of granules above; on its lower surface it has a row of six spines, the distal one being placed at some distance from the others; there are also two spines on the inner side of the femur at its distal end. Patella armed with two inner and one outer spine. Tibia with three inner and four outer spines. Tarsus with three spines on each side.

*Legs*.—Trochanters of anterior legs furnished with one or two granules below. Femur of first leg unarmed; femur of fourth leg almost straight. The number of tarsal segments is as follows:—8-9, 19, 7, 8. The claws of the posterior legs are unarmed.

*Colour*.—Dorsal surface dark brownish and usually marked with blackish reticulate markings. With the exception of the first one the sternites also are rather dark brownish; but the first sternite and the coxæ are much paler in colour. Proximal segment of chelicera rather extensively darkened and the second segment has dark reticulate markings on the sides. Proximal segments of palp extensively infuscated, but the distal segments are either quite pale or only slightly darkened here and there. Legs brownish, but they become paler distally, and the distal ends of their metatarsi and the entire length of the tarsi are whitish.

*Measurements in mm.*—Length of trunk 3·75, of scutum 3, of fourth leg (from base of femur) 13·75.

*Material*.—Three male specimens, collected by Capt. S. S. Flower at Chantaboon, Siam.

*Epedanus siamensis*, sp. n. (Pl. I. fig. 8.)

*Scutum* a little shorter than the tibia of the second leg and considerably shorter than the patella + the tibia of the

fourth. The transverse grooves are four in number. On each side of the cephalothoracic part there is a semitransparent swelling similar to that which is present in the same position in the species of *Pseudobiantes*. A pair of thorns are placed on the abdominal part, and they are of practically the same size and are situated in the same position as those of *E. orientalis*, sp. n. The lateral tooth-like processes which are sometimes present on the last abdominal area of the scutum of *E. orientalis* apparently do not occur in the species now under discussion. There is a longitudinal series of very minute granules on each side of the scutum, and a transverse series of very minute granules is present on its last abdominal area. With the exception of those just mentioned there are very few granules on the surface of the scutum; but a few additional isolated ones are present on the abdominal part.

*Ocular tubercle* situated some distance in front of the middle of the cephalothoracic part. Its thorn is shorter than the transverse width of the tubercle.

The first two of the *free dorsal segments* each have a transverse series of very minute granules, and a quite obsolete transverse series may also be present on the third, but there are no granules on the fourth.

*Ventral surface*.—The first coxa has a transverse row of granules, but there are no distinct granules on the other coxæ nor are there any on the sternites.

*Chelicera*.—♂. Proximal segment very much shorter than and quite differently shaped to that of *E. orientalis*; it has only minute granules on its dorsal surface. Second segment swollen; its upper surface is furnished with several granules and also with a process bearing three or four little points or granules at the end. This process is placed close to the base of the immovable finger.

♀. Second segment of chelicera of female specimen not swollen, and the process which is situated on its upper surface near the base of the immovable finger is poorly developed; the shape and armature of the fingers are also different to what they are in the male.

*Palp*.—Trochanter of palp furnished with two or three conical granules above, and with another slightly larger one below. There is a longitudinal series of conical granules on the upper surface of the femur, and a series of four or five similar granules is also present towards the inner side of the ventral surface. The femur has also two spines on its inner side at the distal end and a row of five spines on the outer side of its ventral surface, the two of them which are placed

nearest the proximal end of the segment being the longest, whilst the distal one is the shortest. Patella, tibia, and tarsus armed with the same number of spines as in *E. orientalis*.

*Legs*.—Femur of first leg unarmed; femur of fourth almost straight. Number of tarsal segments 8-9, 22-24, 9, 10. Claws of the posterior legs each armed with a single large tooth.

*Colour*.—Body and appendages pale yellowish brown, but the distal ends of the metatarsi and the whole length of the tarsi are whitish.

*Measurements in mm.*—Length of trunk 3.75, of scutum 3, of fourth leg (from base of femur) 16.5.

*Material*.—A specimen of each sex from Chantaboon, Siam (*Capt. S. S. Flower*). The male has its very long penis fully extruded and the tip of the ovipositor of the female is visible when the genital operculum is lifted up.

*Remarks*.—Like *E. orientalis*, sp. n., this species has a pair of thorns on the second abdominal area of the scutum, but it can easily be distinguished from that species by the presence of the swollen area on each side of the cephalothoracic part of the scutum, by the shortness and difference in shape of the proximal segment of the chelicera, by the greater number of tarsal segments, &c. It is also much paler (yellower) than *E. orientalis*.

*Note*.—Dr. C. Fr. Roewer gives the shortness of the median spine as compared with the transverse width of the ocular tubercle as one of the characters distinguishing his two new genera (*Epedunellus* and *Takaoia*) from *Epedanus*. This character does not seem to be of much importance. In *Pseudobiantes japonicus*, Hirst, a species which has an ocular tubercle of the same type as the species of *Epedanus*, this thorn may be either distinctly longer or slightly shorter than the transverse width of the tubercle. In *Epedanus orientalis*, sp. n., it is shorter than the width of the tubercle, and yet this species is in all other respects quite a normal member of the genus *Epedanus*.

The shape of the proximal segment of the chelicera is another character employed by Dr. Roewer to distinguish the two new genera mentioned above, but the shape of this segment is very different in closely allied species of *Epedanus* (for instance, in the two new species described above), and this is also the case in the genus *Phalangodes*. I do not think myself that this character is of generic value.

## Genus PARABIANTES, nov.

Scutum with four well-defined transverse grooves. Ocular tubercle elongated transversely, but not very wide; the thorn which is situated in the middle of it is exceedingly long, its length being about twice the transverse width of the tubercle. Palp very long, the femur and the slender part of the patella being especially long; only the tibia and tarsus of this appendage are armed with spines. Femur of first leg unarmed.

The ocular tubercle of this genus is built on the same plan as that of *Epedanus*, *Pseudobiantes*, &c., but the palp closely resembles that of the species which were formerly referred to the *Hinzuanidæ*.

*Parabiantes longipalpis*, sp. n. (Pl. I. figs. 9, 9 a.)

*Scutum* as long as the patella + the tibia of the first leg and shorter than the tibia of the fourth. It has four well-defined transverse grooves, the one which separates the cephalothoracic part from the abdominal part being the deepest. Cephalothoracic part convex and fairly large, its length being equal to the united lengths of the first three abdominal areas of the scutum. First abdominal area longer than any of the other abdominal areas, but its length is less than that of the second and third taken together. There are a few granules on either side of the anterior margin, and a longitudinal series of granules is present on each side of the scutum; otherwise its surface is quite smooth. It has no processes or spines except the one which is present in the middle of the ocular tubercle. *Ocular tubercle* situated slightly in advance of the middle of the cephalothoracic part of the scutum [for the details of its structure, see the generic description].

*Free dorsal segments* quite smooth, granules being entirely absent.

*Ventral surface*.—Each of the coxæ of the legs has a single series of granules, but that on the fourth is obsolete [absent on one side]. Sternites quite smooth.

*Chelicera*.—Proximal segment elongated; it is subcylindrical for part of its length, but becomes gradually stouter towards the distal end; there are two or three granules on its dorsal surface near the proximal end and one or two obsolete granules near the distal end. Second segment fairly stout and with several granules on its dorsal surface.

*Palp* very long and only its tibia and tarsus are armed with spines. Its femur is extremely long, its length equalling

that of the body, and is slender and cylindrical, but the distal end is a little stouter than the rest of the segment; except for a little conical granule, which is situated on the ventral surface near the proximal end, the femur is quite unarmed. Patella very long; it is unarmed and is slender and cylindrical almost throughout its length, only the extreme distal end being enlarged. Tibia and tarsus fairly stout; they are bent in such a manner that the spines of the one segment work against those of the other, as in *Hinzuanus* &c. Tibia provided with three inner spines, all of which are long, the one which is placed nearest to the distal end being the shortest; on its outer side it has six spines, some of which are long and others short. Tarsus with three inner spines and four or five outer spines; this segment has also a number of sharply pointed denticles in the middle of its lower surface.

*Legs* 2, 4, 3, 1; the trochanters of the anterior legs each have a little granule on their upper surface and three granules on their lower surface; all the other segments of the legs are quite smooth and without either granules or spines. Tarsal segments 11-12, 30-32, 11, 11-13. Claws of the posterior legs unarmed.

*Colour*.—Body and appendages dark brown, but the tibia and tarsus of the palp are pale brown and the distal ends of the metatarsi and the entire length of the tarsi of the legs are quite pale.

*Measurements in mm.*—Length of trunk 7, of scutum 5.5, of first leg (from base of femur) 20.25, of second 37, of third 26.5, of fourth 34.5, of femur of palp 7, of patella of palp 4.75.

*Material*.—A single adult example of the female sex, collected by Dr. W. Kükenthal. No exact locality is given for this specimen, but it is probably either from Borneo or Halmaheira.

### *Hinzuanus parvulus*, Hirst.

*Hinzuanus parvulus*, Hirst, Trans. Linn. Soc. xiv. p. 393 (1911).

The palp of this curious little species resembles that of *Acudorsum albimanum*, Loman, very closely in structure, the armature of the femur and the shape of the patella being very similar in these two species and somewhat different to what they are in the other species of *Hinzuanus* which I have had the opportunity of examining. In *H. parvulus* the tarsus of the palp is quite as dark as the tibia and there is

no process on the abdominal part of the scutum; for further characters of this species, see the original description. I am inclined to think that *Acudorsum* is a synonym of *Hinzuanus*.

#### EXPLANATION OF PLATE I.

- Fig. 1.* *Zalmoxis austernus*, sp. n. Outer view of palp.  
*Fig. 1 a.* Ditto. Fourth leg of male, outer view.  
*Fig. 2.* *Vima insignis*, gen. et sp. n. Palp, outer view.  
*Fig. 3.* *Ibalonius quadriguttatus*, sp. n. Chelicera, outer view.  
*Fig. 3 a.* Ditto. Palp, inner view.  
*Fig. 4.* *Podoctis taprobanicus*, sp. n. Anterior end of body and proximal part of first leg, from the side.  
*Fig. 5.* *Podoctis willeyi*, sp. n. Chelicera of male, outer view.  
*Fig. 5 a.* Ditto. Trochanter and femur of first leg, from the side.  
*Fig. 6.* *Baramia vorax*, gen. et sp. n. Palp and anterior end of body, from the side.  
*Fig. 6 a.* Ditto. Chelicera, outer view.  
*Fig. 6 b.* Ditto. Trochanter and femur of first leg, from the side.  
*Fig. 7.* *Epedanus orientalis*, sp. n. Chelicera of male, outer view.  
*Fig. 7 a.* Ditto. Palp, outer view.  
*Fig. 8.* *Epedanus siamensis*, sp. n. Chelicera of male, outer view.  
*Fig. 9.* *Parabiantes longipalpis*, gen. et sp. n. Anterior view of ocular tubercle.  
*Fig. 9 a.* Ditto. Palp, outer view.

#### VIII.—*Hersilia (Clausidium) vancouverensis*.

By KATHLEEN HADDON.

[Plate II.]

#### *Hersilia (Clausidium) vancouverensis*, sp. n.

IN the summer of 1911 Mr. F. A. Potts, of Trinity Hall, Cambridge, collected a large number of specimens of *Callianassa pugettensis* from a stretch of sandy beach at Hammond Bay, near Nanaimo, Vancouver Island. A small copepod occurred in vast numbers in the gill-chambers and also all over the body of many of the *Callianassæ*, conspicuous on account of the bright red colour of the egg-sacs. They alternated between a state of quiescence, during which they were attached to the surface of the host, and rapid jerky movements, made when disturbed. The tiny male was attached to the tail of the female in almost every case.

On his return home Mr. Potts gave me the copepod for identification, and I found that it belonged to the genus *Hersilia*.